

# **METHODS AND APPARATUS FOR MANUFACTURING OPERATIONS USING OPPOSING-FORCE SUPPORT SYSTEMS**

## **ABSTRACT OF THE DISCLOSURE**

5           Methods and apparatus for manufacturing operations using opposing-force support  
systems are disclosed. In one embodiment, an apparatus includes a track assembly adapted  
to be attached to a workpiece, and a carriage moveably coupled to the track assembly. The  
carriage includes a tool support adapted to receive and support a manufacturing tool. An  
opposing-force support assembly is operatively coupled to the carriage and is adapted to be  
10 secured to the workpiece. The opposing-force support assembly at least partially  
counterbalances a manufacturing force exerted on the workpiece by the manufacturing tool.

